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Agricultural Extension Bulletin No. 23

UNIVERSITY OF SASKATCHEWAN
COLLEGE OF AGRICULTURE

Reducing Dairy Production Costs By Proper Feeding Methods

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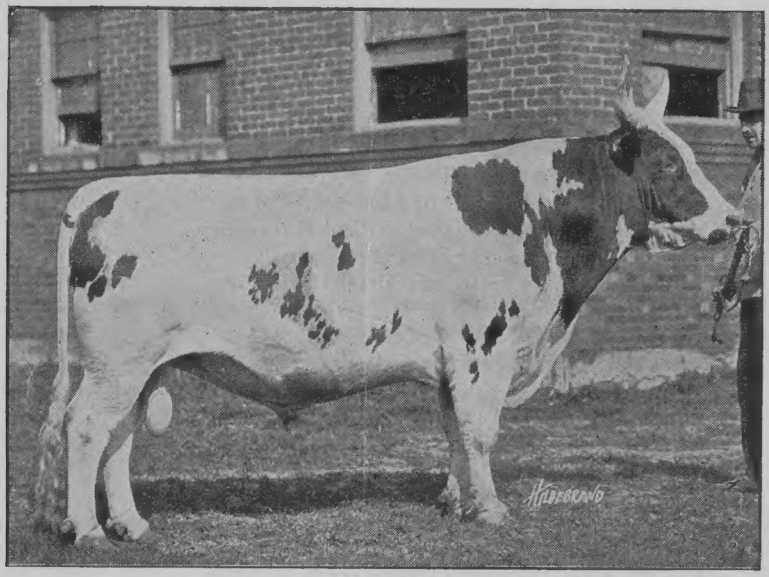

Lessnessock Golden Love 56194, *Ayrshire Herd Bull*
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SASKATOON, SASKATCHEWAN
April, 1924

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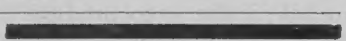
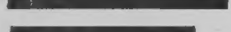
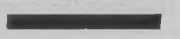
Reducing Dairy Production Costs
By Proper Feeding Methods*

By
LAURENCE M. WINTERS

A dairyman is very much like anyone else engaged in a business enterprise—he is in the business for a profit. And, furthermore, like those in most other business enterprises of today, he must sell his produce on the world's market. This is a point which we must bear in mind—that today we are closer to Liverpool and Amsterdam than we were fifty years ago to Toronto. This provides us with a world's market for our produce; but it has its disadvantages as well, for those peoples of the world who are the most efficient in production are bound to make the most profit and succeed when others fail. Because of the immense importance of this fact, Table I. was prepared; it illustrates the average production per cow in Saskatchewan as compared with the average production in some of the leading dairy countries of the world.

TABLE I.

Average Yield of Milk per Year of Milk Cows in Saskatchewan and Various Countries * *

Netherlands	7,585 lbs.	
Switzerland	6,950 lbs.	
United Kingdom	5,934 lbs.	
Denmark	5,666 lbs.	
Germany	4,350 lbs.	
Canada	3,779 lbs.	
Saskatchewan	3,143 lbs.	

A remarkable point in this connection is that we—in the Dominion—have the highest producing dairy cow in the world—Agassiz Segis May Echo: she produced 1,345 pounds of butter fat in one year—and yet, in average production, we lag so far behind. If,

*Summary of an Address given at the 1923 Convention of the Saskatchewan Dairy Association.

* *Compiled from "A Handbook of Dairy Statistics."

then, we can produce record cows, certainly we can improve our production and raise our general average; and this is the *big job* before the dairymen of this province.

One way of increasing the average production is by the breeding of better dairy cows, and we must not, for a moment, minimize the importance of this point; but another way that the production can be increased is by the proper feeding of our cows. In this connection, results obtained at Cornell University are of interest. The cows in question were owned by a dairyman whose farm was adjacent to the University. These cows were not properly fed. Exact production results were kept by the University. For the first year, they remained on the owner's farm; then they were taken to the University, where they were properly fed for the second and third years; and the fourth year they were returned to the owner's farm. Table II. illustrates the summarized results of that work, the production being increased nearly 50 per cent. by full feeding.

TABLE II.

Full Feeding Pays. Comparative Results of Under-Feeding and Proper Feeding on Milk Production *

	Average Weekly Production Per Cow	
	Milk	*Fat*
First and Fourth Years, Underfed	109 lbs.	4.7 lbs.
Second and Third Years, properly fed	155 lbs.	7.1 lbs.

This point of full feeding is a very vital one, and the time that it should start is in calfhood. The dairy cow must have plenty of middle if she is to produce a large yield of milk; and she will not have a deep and wide middle unless liberally fed from birth. Table III. illustrates this point and summarizes the results obtained at Iowa State College with scrub cows, heifers and calves of similar breeding purchased from Arkansas.

TABLE III.

Comparative Results of Under-Feeding and Proper Feeding from Calfhood on the Milk Production of Similarly Bred Cows * *

	Average Yearly Production Per Cow	
	Milk	*Fat*
Underfed Until Mature.....	3,168.7 lbs.	153.64 lbs.
Underfed Until Four Years Old	3,597.7 lbs.	166.36 lbs.
Properly Fed from Calfhood	4,036.1 lbs.	191.21 lbs.

*Compiled from Cornell Bulletin 222.
**Compiled from Iowa Bulletin 188.

The cows had been developed under unfavorable conditions and underfed to maturity; the heifers had been underfed until four years old; and the calves which were out of the above-mentioned cows and heifers, were well fed from birth. Comparing the production of each group, we find that those heifers, receiving full feed before reaching full maturity, increased in production over the first group by 13 pounds of fat; while the calves which had been properly fed from birth, produced in round numbers, 38 pounds more fat than the cows reared under unfavorable conditions.

There is one other point in connection with this chart that is extremely interesting. The average production is 191 pounds of fat for these scrub cows, while the average production per dairy cow in this province is about 110 pounds of fat, and I have not yet seen as scrubby a group of cows in this province as was that group of cows at the Iowa Station. We have in Saskatchewan a great many cows that are unappreciated, because they have never been given a chance—cows that are capable of producing as high as 300 pounds of butter fat.

A full feed does not mean all that a cow will eat, but all that she requires to supply her own needs, with enough left over to produce milk to her full capacity. It takes a certain amount of food to keep a cow's system going, regardless of production; if she has any food left over and above her body requirements, she will put that in the pail, up to her ability to do so. Table IV. illustrates this point.

TABLE IV.

Under-Feeding is Extravagant. (1,200 lb. Cow Giving 32 lbs. Milk Testing 3½ Per Cent.)

	Digestible Nutrients	Nutrients *Required for Maintenance*	Nutrients *Available for Production*	*Per Cent. Available for Production*
Half Ration.....	9.51 lbs.	9.51 lbs.	0 lbs.	0
Three-Quarter Ration	14.26 lbs.	9.51 lbs.	4.75 lbs.	33 1-3
Full Ration.....	19.02 lbs.	9.51 lbs.	9.51 lbs.	50

The question, then, is: What constitutes a full feed? In the main, feeding a cow about 3 to 4 pounds of silage per 100 pounds live weight, with all the hay she will eat, and 7 pounds of grain to 1 pound of butter fat, or 1 pound of grain to 4 pounds of milk, will suit most cows so far as feed requirements are concerned.

Another very important point is the balance of nutrients. A cow requires the following nutrients in the correct proportions: Water, mineral matter, carbohydrate equivalent and protein.

The water need cause no worry provided the cows are furnished a plentiful supply that is cool and clean. The mineral will be provided by the use of a good legume or prairie or slough hay; but if we are trusting to oat sheaves or straw, the supply of minerals is likely to be low. Farmers with high producing cows, who are unable to provide a good legume hay will find it well to mix 3 or 4 pounds of rock phosphate, ground limestone, or steamed bone meal with each 100 pounds of grain. This then leaves but two nutrients to be provided, namely, protein and what is called carbohydrate equivalent—the fat and sugar combined. Now, in reality, a cow is a factory turning out a finished product from raw materials, just like the manufacturer of implements. The manufacturer must have wood and iron in the correct proportions. So with the cow, she requires the correct amount of protein or she has to quit manufacturing milk, regardless of how much carbohydrate equivalent she has on hand; thus it is our business to provide her with these materials as she needs them and in the right proportions.

This is not necessarily a complicated problem; in order to balance the ration, it is not necessary to split pounds of feed, feeding one cow two pounds of oilmeal and another one. All that is necessary is to have a little appreciation of the differences in our feeds and to furnish them accordingly.

If we are feeding silage and sweet clover or alfalfa—which, as a foundation, can scarcely be excelled—then, by adding equal parts of oats and barley, we will have a good balanced ration. The addition of a little bran will also be good. Still another important point is that we are then feeding strictly farm grown feeds. On the other hand, if we are using such hays as brome, prairie hay or oat sheaves, a mixture of about five parts of oats, two of barley, four of bran, and one of oilmeal will balance our ration for all practical purposes. The principle is this: Legume hays, like sweet clover or alfalfa, are what are called protein feeds —in other words, they run high in protein—so that with them we should use grains that run high in carbohydrates, as oats and barley; but when we use oat sheaves, brome, or prairie hay—which are low in protein—we must supply the protein in some other way, and the most satisfactory way is by the use of such feeds as oilmeal and bran. They, however, are generally expensive; and even then, the ration made up of silage, sweet clover, barley and oats will give better results than the more expensive one in which the use of oilmeal and bran is made necessary because of the lack of nitrogenous roughage.

The final page contains a list of rations and a few general rules regarding the summer and winter feeding of dairy cows that are to be recommended. If these suggestions are followed, it is

not necessary to purchase much expensive feed to balance the rations. Nearly all of the feeds are provided from the farm, and the greater portion from land that is ordinarily idle and is, therefore, bound to lower production costs.

Suggestions for Feeding the Dairy Cow

Dairy cows yield the greatest profits when fed according to size and according to the yield of milk and butter fat, and when the basal portion of the ration consists of cheap but rich home-grown roughages.

A rich growth of pasture is the natural and ideal dairy feed, and, when not available, the more closely we can imitate it the better.

Silage and roots are the best substitutes for pastures in the winter months.

Silage and sweet clover hay save expensive feed.
Sunflowers, corn and oats all make good ensilage.

Summer Feeding on Pasture

Heavy milking cows cannot get enough nutrients from grass alone to supply their needs. For heavy producing cows, the following amounts of grain are recommended:

30 lbs. milk	3 lbs. grain
35 lbs. milk	7 lbs. grain
40 lbs. milk	8 lbs. grain
50 lbs. milk	10 lbs. grain

Soiling crops and summer silage are to be strongly recommended for areas where pastures become dry.

A SOILING SYSTEM FOR TEN COWS

Crop	*Approximate Date of Sowing*	*Rate of Seeding Per Acre*	*Acres*	*Approximate Date of Harvesting*
Sweet Clover... or Alfalfa.....	Previous Year Previous Year	15 lbs. solid 3 lbs. in rows	3	June 15—July 15
Oats.....	May 1	2 bushels	1½	July 15—August 1
Oats.....	May 20	2 bushels	1½	August 1—August 15
Corn..... or Sunflowers.....	May 10—20 May 5—10	20 lbs. drilled 10-12 lbs. drilled	3	August 15 on

A second cutting of sweet clover will usually be obtained, beginning July 15th. In that case, it can be fed with the oats.

A cow will handle from 40 to 70 lbs. of soilage (freshly cut green feed) a day, depending upon the crop, her size and yield of milk.

Winter Feeding

1. Feed 3 to 4 pounds of silage to the 100 pounds live weight of the cow.

2. Feed all the good clean hay—preferably a legume—that she will eat.

3. Feed 1 pound of grain for about every 4 pounds of milk, or 7 pounds of grain for about every 1 pound of butter fat.

The following grain mixtures, by weight, are recommended when the accompanying roughages are used:

1.	3.	5.
Brome hay *	Oat sheaves	½ Sweet clover and
4 Parts gr. oats	5 Parts gr. oats	½ Brome or Western
2 Parts gr. barley	3 Parts gr. barley	Rye Grass
4 Parts bran	4 Parts bran	4 Parts gr. oats
1 Part oilmeal	1 Part oilmeal	5 Parts gr. barley
		1 Part bran

2.	4.	6.
Brome hay * or Western	Oat sheaves and	Sweet clover and
Rye Grass and Silage	Silage	Silage
5 Parts gr. oats	4 Parts gr. oats	4 Parts gr. oats
2 Parts gr.	3 Parts gr. rye or	5 Parts gr. barley
Barley	Barley	1 Part bran
4 Parts bran	4 Parts bran	
1 Part oilmeal	1 Part oilmeal	

*If prairie hay is substituted in Rations 1 and 2, add one part of bran.